



Day 6- Fact Sheet 15
Tales of the Todd- Read all about it!
Desert Waterholes and Biodiversity

The waterholes that can be found along the Todd river's sandy desert creeklines are not typical freshwater ponds. This is mainly because of the fact that they can change so dramatically with the seasons. Water temperatures can range from 3 - 40 degrees; salinity levels range from fresh to hyper saline; dissolved oxygen can range from stagnant to supersaturated.

A typical waterhole will contain algae and phytoplankton, which will feed such things as small crustaceans and water snails, tadpoles, mosquito larvae and bloodworms. Other aquatic insects will in turn feed off these small creatures and become the prey themselves for fish such as grunters and rainbow fish and frogs. Herons are top of the food chain here. Other water birds such as teals will eat water plants and snails, and waders such as dotterels and stilts will eat insects and worms. Dead organic material that collects at the bottom of the waterhole will also feed ground trawlers such as insect larvae and yabbies.

Fish of the Centre

The small CA Goby (*chlamydogobius eremius*) demonstrates some of the diverse ecological adaptations that enable fish to live successfully in desert wetlands. It occupies all types of water from very fresh to salinities higher than seawater. It can tolerate temperatures as low as 5 degrees C and as high as 40 degrees C. Behaviourally it uses the layered temperatures in a pool, congregating in cooler vegetated side-shallows or lying buried in the cooler bottom sediments. It will also emerge to allow itself to cool evaporatively. It can survive in the most stagnant water and will find respiratory refuge in mats of algae which bubble oxygen into the surrounding water during photosynthesis.


Families of catfish, hardyheads and grunters also survive these fluctuating conditions.

Do we Know enough about Desert Rivers?

Because the focus of river scientists has inevitably been on rivers close to population centers and major development, our understanding of the often remote and relatively undeveloped dryland rivers is meager. There are already lessons we might be able to learn from dryland river systems in other parts of the world. For example water diversions, huge irrigation schemes, grazing and cropping pressure on flood plains and riparian zones and mining pollution have all become issues, and the outcomes of such interventions have been things like diminished flows, pollution, salinisation, algal blooms, and declines and extinctions of animals and plants.

We need to ensure that we understand more about the ecology of the desert river before we allow further development along its corridors. Areas that have been identified as needing more study include

- distinctive ecological processes, particularly the role of flow variability
- The functions and roles of riparian zones

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- The functions and roles of floodplains, including rarely inundated floodplain wetlands
 - The functions, roles and flow requirements of refugia for aquatic fauna, particularly in large permanent waterholes
 - Endangered, endemic and undescribed species
 - Impacts of terrestrial land uses, particularly riparian and floodplain grazing and vegetation clearance in headwaters
 - Present and potential impacts of water diversions and impoundments
 - Groundwater issues

Human Impact in CA

Because the land types surrounding CA's desert rivers are more fertile and produce vegetation growth more regularly than others, they are the backbone of the pastoral industry. Most cattle graze on them and the majority of station homesteads are situated here. Aboriginal people have particularly strong ties to these areas, too. Unfortunately few examples are represented in conservation reserves and many native animals that originally occurred here have become extinct.

Major management problems are soil erosion, reduction in the proportions of productive grasses through over grazing, encroachment of woody plants, rabbit control, fire intervention, and conservation of native animals.

Golden bandicoots and bilbies were once common in this country but have now disappeared. Until the 1930s Brushtail Possums were abundant in the trees lining the rivers but only survive now in a few isolated localities in the MacDonnell and Peterman Ranges.

Weed infestation is a growing problem. Imported couchgrass (*Cynodon dactylon*) for example is an aggressive colonizer of riverbeds, displacing native grasses and sedges. It grows vigorously after rain, adding a significant amount of inflammable material. This can subsequently fuel very hot fires which damage river red gums and other trees. Prior to the introduction of couch, rivers were effective firebreaks but infested watercourses can now provide a channel for spreading fires rather than limiting them.